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J. G. Bartholomew * not only chart Cape Hudson, but they chart Peacock's Bay, Pt. Emmons, Disappointment Bay, Pt. Case, Pt. Alden, Cape Carr, Porpoise Bay, North's High Land, Totten's High Land, Budd's High Land, Knox's High Land, Termination Land, with a query, and the whole is called Wilkes Land. The appearance of the name "Wilkes Land" on this portion of East Antarctica, and especially the appearance, at last, of "Cape Carr," as well as the entire tone of Dr. Mill's well-written and impartial book, are extremely significant, for they show that many English geographers have a high standard of fairness and honour.

And now to take up another phase of this question. The whole of East Antarctica may be one great land mass. Or it may be that Wilkes Land is one mass, possibly a continuation of Australia; and Victoria Land one mass, possibly a continuation of New Zealand. No one can say positively, until an expedition is sent to explore systematically the northern coast of East Antarctica. Mr. Henryk Arctowski, a member of de Gerlache's Antarctica Expedition, is trying hard to keep up interest in Antarctic exploration and to have international co-operation in the future, as he has explained in a recent monograph.† Is it impossible to wake up Governmental interest in the United States in this matter, or, if it is, would not some American multi-millionaire furnish the funds to send an expedition to settle for all time the facts about the greatest geographical discovery of the Nineteenth Century, the coast of "The Antarctic Continent" discovered by Charles Wilkes?

EDWIN SWIFT BALCH.

GEOGRAPHICAL RECORD.

AFRICA.

GAUTIER'S JOURNEY ACROSS THE SAHARA FROM TUAT TO THE NIGER.—Last summer Professor E. F. Gautier, a member of the Faculty at l'École des Lettres of Algiers, crossed the Sahara between Algeria and the Niger River. His route lay between those of Caillié and Lenz in the west and of Foureau and Barth in the east. He is the first explorer to cross this wide part of the desert since Laing was murdered near Timbuktu in 1826; the notes of this journey across the desert were never recovered.

The journey Gautier has made would have been regarded four years ago

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* I have seen it stated recently that Mr. Bartholomew christened the Southern Continent "Antarctica." I am unable to verify the statement, but, if it is correct, he deserves full recognition for coining this excellent name.

† *Projet d'une exploration systématique des Régions Polaires*, par Henryk Arctowski, Bruxelles, 1905.

as a foolhardy undertaking, destined to failure and probably involving the life of the explorer. But Gautier has crossed the Sahara without special difficulty, and for a large part of the way he travelled practically unarmed and accompanied only by a servant and a guide. His immunity from the great dangers that attended earlier explorers is due in part to the development by the French of a system of fast travel by means of specially-trained camels, thus shortening the time required to reach the various oases where supplies may be replenished; and in part to the powerful influence which the French have acquired over the Tuaregs, who have been brought by the energetic policy of Laperrine, the Commandant at the Tuat oases, under complete subjection.

Early in 1904 Laperrine was able, without the slightest interference from the natives, to travel from the Tuat oases through Inzizi and Timisao to the Adrar plateau, where, at the wells of Tinsauaten, he met a French expedition under Captain Thévéniaut that had been sent from Timbuktu. It was thus proved that communications were open between Algeria and the French Sudan. Both parties turned back to their starting-points from the place where they met, so that Gautier is the first explorer to cross the entire desert under the improved conditions of travel.

He started in May last from Tuat with the Etiennot party sent out to select a route for the proposed telegraph line across the Sahara. Gautier was well prepared for travel and research in the Sahara by his scientific investigations in the northern part of the desert during the two previous years. A new route was followed to the west of Laperrine's road as far south as Uallen, whence the party travelled east to Adrar Ahnet and then south to Inzizi, and from there continuing along the Laperrine route to Timisao.

At this point, in the middle of the desert, Gautier left the survey party and started with his two comrades on their swift camels. The remaining 600 miles of the journey, to Gao on the Niger River east of Timbuktu, were made by these three men in entirely new territory. Gautier ascended the Niger from Gao to Timbuktu and Bammako, and reached the Atlantic by the railroad from Bammako and the Senegal River. He arrived in Paris early in October, less than six months after starting from the Tuat oases.

Gautier informed the Paris *Temps* that his journey to the Sudan had not been difficult, and that the prevailing view of the Sahara as an impediment to communication was much exaggerated. The most trying and difficult part of the route was that across the Tanesruft district, about 300 miles, but even here the discomforts of the journey were much alleviated by the wells at Inzizi and Timisao.

He says that the Sahara, viewed as a desert, is much less extensive than has generally been believed. The Adrar plateau, from 2,300 to 2,700 feet above sea-level, is not, properly speaking, a waste; and while he was still 360 miles from Gao on the Niger he reached a wide belt of steppe, which is the merging of the Sudan with the Sahara. This steppe region has its rainy season with from 150 to 300 millimetres (about 6 to 12 in.) of precipitation every year. This quantity suffices to cover the land with ponds and grass. Animal life is abundant; he found many varieties of antelopes, and also wild hogs, giraffes, lions, and elephants.

He got on very well with the Tuaregs, who gave him everywhere a hospitable reception. He distinguishes between the Tuaregs who ride on camels and those who use horses; the first inhabit the drier regions, and, thanks to the swift camel-riders (Meharists) of Laperrine, they have been completely subjected; the Tuaregs who use horses, on the whole more numerous, live in the steppe region and along the Niger and are still comparatively independent, for the reason that in the Timbuktu district there are as yet few men for the formation of strong camel corps.

Gautier believes that he has cleared up the mystery relating to the wadys coming from the Atlas ranges of Morocco and the Hoggar Mountains in the desert. In his opinion their courses are all directed to an extensive depression in the desert, of which the saline district of Taodenit is the centre. The salt is obtained by evaporation. Gautier says that at some time not very distant a great lake, similar to Lake Chad, existed in this depression, receiving the waters not only of the wadys pushing out into the Sahara but also of the Niger itself. The courses of these streams were finally blocked by sand dunes.

The explorer found abundant evidences that this part of the Sahara once had a very large population of the Neolithic period of development. His finds included many arrow-points and axes of polished stone. Even the waste regions were inhabitable until a comparatively recent period. Proofs of this are found in the thousands of drawings upon the rocks, the graves in which, everywhere, the same kinds of implements and other objects were found, and the stones used for grinding grain. These stones show that agriculture was practised here, and that civilization was considerably advanced.

The gradual desiccation of this region advanced from the Sudan. To-day, however, the rain-belt is again extending more and more to the north. Gautier distinguishes these three epochs: the first was marked by dense population; the second by desert conditions; and in the third, or present period, the land is again assuming a steppe-like character. The most important geological result of the journey was the discovery of the predominance of Silurian formations. The archæan rocks form only islands. The Silurian strata are extremely distorted, and almost everywhere metamorphosed. He was also able to collect new and precise information concerning the volcanoes of Inzizi and Hoggar.

M. Gautier is now engaged in the preparation and publication of the results of his three years of explorations in Tuat and other parts of the northern desert and of his journey across the Sahara. The above facts are taken from *Globus* (No. 19, Nov. 23, 1905) and from Gautier's note in the *Annales de Géographie* (No. 78).

REPORT OF THE CONGO COMMISSION.—The Belgian Government printed in November the Report of the Commission appointed by King Leopold to investigate conditions in the Congo Free State. The Commission says that, though freedom of trade is formally recognized, there is virtually no trade properly so called among most of the natives. The State is warranted in considering vacant land as belonging to it, but each native settlement should have a zone of sufficient size to meet the agricultural needs and make the natives self-supporting. The question of forced labour is discussed, and the Commission is of the opinion that on this basis alone the natives may be reclaimed from barbarism. The Free State has the right to demand from them co-operation in working out their development; but forced labour must be applied in an equitable and paternal manner, and the remuneration should not be inferior to the price of the labour required. This principle has not always been observed.

The Report sets forth acts of violence by agents in the collection of taxes. The local Government has sent instructions from time to time recommending gentle and humane dealings with the natives, but more efficacious means have rarely been employed. The courts, however, have punished, in conformity with the law, every act of ill-treatment submitted to them.

The amount of forced labour fixed by law is 40 hours per month, but more has often been demanded. The cruelties imposed upon natives have largely grown out of their refusal to give the service required. The resulting abuses, criticised chiefly by English missionaries, have greatly decreased in the regions of Lake Leopold II, Lake Tumba, and in the districts of the Welle and Aruwimi. But the improvement has not been maintained in regions exploited by certain commercial societies, and particularly as regards the Abir Company in the Mongalla district, where the imprisonment of women as hostages, flogging to excess, and various acts of brutality are not contested. The evil is largely due to the employment of native sentinels of a degraded and ferocious nature. The State has made a great advance by forbidding the despatch into the villages of any native member of the public police, unless accompanied by a white man.

The Commission advises that the carrying of arms by native sentinels be abolished, and that the right to use force be denied to the commercial societies. Commercial companies should never be permitted to send out armed expeditions.

After these various criticisms the Commission exhibits a more pleasant side of the picture. Here is an extract from the Report:

> We all thought our mission was mainly to inquire into acts of violence against the natives, or, in other words, to seek out the evil. This would not prevent us from placing on record what seemed to us good. Let us say at the outset that when one travels in the Congo and compares the present with the past the impression is one of admiration and astonishment. In these regions, which 25 years ago were steeped in the lowest barbarism, where a white man carried his life in his hands, where whole tribes were decimated by Arab raids, where traffickers in human flesh marked the choicest morsels on the living victim, where atrocious massacres were of constant occurrence, in this dark and mysterious continent a State has arisen which has introduced the benefits of civilization into the heart of Africa. To-day security reigns in this immense territory, the slave trade has disappeared, cannibalism scarcely exists, human sacrifices are rare. Villages recalling European seaside towns stud the river banks of the Lower Congo. Leopoldville, with its busy traffic, reminds one of the industrial cities of the world.
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> These railway systems both on the Lower and Upper Congo, these 80 steamers which navigate the main river and its tributaries, these 1,200 miles of telegraph, these hospitals and schools, which sprang up as if by magic, give the traveller the impression, not of crossing a continent unknown 25 years ago, but a country long settled under the sway of European civilization. The impression is heightened when one sees the perfection with which the administrative machine works throughout the young state. Boma is in touch with the most distant stations and is the centre of authority, which radiates thence to the extreme limit of King Leopold's territory.

The Report covers nearly 150 pages. The commissioners spent five months in the Congo State studying the situation. As soon as their recommendations and testimony were made known to King Leopold, he appointed a new Commission of fourteen members with instructions to formulate measures rendered necessary by the disclosures in the Report and to suggest practical means of giving effect to these measures.

EXPEDITION TO MOUNT RUWENZORI.—A party started for Central Africa from London towards the end of October for the purpose of spending about two years in the investigation of the flora and fauna of the snowy range of the Ruwenzori Mountains, which are on the boundary between the Uganda Protectorate and the Congo Free State. The party. which consists of H. B. Woosman, Gerald Legge, C. D. Dent, and Mitchell Carruthers, goes out under the auspices of the Natural History Department of the British Museum. It is hoped that the expedition will complete the geographical exploration of this region.

ELECTRIC POWER FROM THE VICTORIA FALLS.—The African Concessions Syndicate has consulted with leading American and European engineers concerning the transmission of power from the Victoria Falls of the Zambezi to the gold mines of the Witwatersrand. These authorities say that the scheme is feasible and would be commercially successful. The climate is suitable for the transmission of power. There is no ice to interfere with the turbines, no snow to break down the wires and the extreme dryness is favourable for long-distance transmission. Even in the driest season sufficient water goes over the Falls to produce 500,000 horse-power, while at present the Rand only consumes 150,000 horse-power. If more than this is needed additional power may be obtained by cutting a canal 15 to 20 miles in length to a point lower down where there would be a head of 1,000 feet, which would be sufficient to produce 1,000,000 horse-power. The needed power could be supplied to the mines in this way more cheaply than by any other method. At present over $15,000,000 is spent annually to produce power on the Witwatersrand. The engineers say that the beauty of the Falls would in no way be impaired.—*Reuter's Agency.*

AMERICA.

MEXICAN AND CENTRAL AMERICAN ANTIQUITIES.—English-speaking students of aboriginal American history have given much attention for some years to the archæology and especially to the glyphic writing of the semi-civilized peoples of middle America. The facts relating to glyphic writing are especially important, both in their bearing on native history and in their application to the origin and development of writing in general. Much of the literature on this subject has been published in foreign languages. Mr. Charles P. Bowditch, of Boston, decided to undertake the translation of some of the more important papers, and it was arranged that the translations should be brought out by the Bureau of American Ethnology. They now appear in Bulletin 28 of the Bureau. The 24 papers translated from the German fill, with illustrations and index, 682 pages. The authors are E. Seler, E. Förstemann, Paul Schellhas, Carl Sapper, and E. P. Dieseldorff. The titles include "The Mexican Chronology with special reference to the Zapotec Calendar," "Antiquities of Guatemala," "Wall Paintings of Mitla," "Maya Chronology," "The Central American Calendar," and "Comparative Studies in the Field of Maya Antiquities."

REPORT OF THE ISTHMIAN CANAL COMMISSION, 1899-1900.—The work of this Commission and its conclusions were summarized long ago, though its *Report* has only recently been issued from the Government Printing Office, Washington. Professor Emory R. Johnson, a member of the Commission, contributed to the BULLETIN in 1903 a comparison of distances by the Isthmian canals and other routes (p. 183) and a study of the commercial aspects of the Panama Canal (p. 481). The quarto volume of the Report is accompanied by 86 plates giving panoramic views, profiles, plans of the proposed Panama and Nicaragua Canals, and maps of rainfall areas, steam and sailing routes and of the economic aspects of all the countries that would be chiefly affected by the opening of an Isthmian canal. Many of the maps are on a much larger scale than is required to show the data clearly, but, on the whole, these sheets are valuable additions.

PRESENT CONDITION AND FUTURE OF THE KLONDIKE.—Mr. R. G. McConnell has written a comprehensive report on the Klondike gold fields which is issued in advance of Vol. XIV of the Annual Report of the Geological Survey of

Canada, in which it will appear. He says that the gold production of the Yukon Territory from the discovery of the Klondike gold fields in 1896 to and including 1903, is estimated by the statistical branch of the Survey at over $96,000,000. The annual production has been as follows:

1896	300,000	1900	22,275,000
1897	2,500,000	1901	18,000,000
1898	10,000,000	1902	14,500,000
1899	16,000,000	1903	12,500,000

All of this gold, excepting about $1,000,000 credited to smaller camps, was obtained from the Klondike creeks and benches and principally from the Bonanza, Eldorado, Hunker, and Dominion creeks, and the Bonanza benches. The dwindling production since 1900, in spite of the increasing use of machinery, is largely due to the gradual exhaustion of the phenomenally rich portions of Eldorado and Bonanza creeks and of the richer Bonanza benches, and does not mark a corresponding decline in the mining industry of the region. The number of creek claims worked and the amount of gravel handled has increased, if anything, in recent years, and the decreasing production must be attributed to the lower grade of the gravels mined.

The centre of mining activity on the various creeks has moved steadily downward towards the wider and leaner gravel beds in the lower parts of the vâlleys, but none of the principal creeks has been abandoned or will be for some years yet.

While the richer portions of the principal creeks show signs of exhaustion, there still remain considerable stretches of unworked gravel on all the producing creeks rich enough to work under present conditions by ordinary placer methods. The industry, therefore, although it is bound to dwindle, will last for a number of years, probably for a decade at least, even if no further important discoveries are made. Placer mining in the future will be supplemented in the Klondike by hydraulic mining on a large scale. The white channel gravels along Bonanza and Hunter creeks are ideally situated for work by this method. The volume of this deposit on these two creeks and their tributaries is estimated at about 450,000,000 cubic yards.

ECONOMIC GEOLOGY IN PERU.—The Society has received *Boletin* No. 26 of the Cuerpo de Ingenieros de Minas del Peru, a Bureau created in 1902 by the Government of Peru to investigate the natural resources of the Republic. These bulletins, issued at frequent intervals, are illustrated with maps and photographs, and contain much varied information concerning mining surveys and development.

This scientific organization became a necessity on account of the rapid development of the various mining industries. Accordingly, in 1902 the "Cuerpo" was established to locate and fix boundaries of mining claims, collect statistics relating to the production and values of ores and accumulate data concerning the geology, mineralogy, and geography of the country. It was soon found that the subjects and projects demanding immediate and serious consideration were so numerous and varied that it was advisable to classify the work and distribute it among independent committees in the "Cuerpo."

Each of these committees has its responsible chief, and one or more assistants. Among the chiefs are four American specialists: Dr. George T. Adams, in charge of underground waters: M. H. Hurd and Charles W. Sutton, for engineering and topographic work; and V. F. Marsters, for economic geology. The Bulletins may be obtained by applying to the Director, Señor Denegeri, at Lima, Peru.

DISEASE AND WEATHER IN THE UNITED STATES.—From the earliest times there has been a prejudice in favour of an influence of climate and weather upon disease, and although modern views concerning the causes of disease have modified most of the older ideas, there are still certain relations between meteorological conditions and health which are readily observable. The section on vital statistics of the *Statistical Atlas* of the Twelfth Census of the United States gives some interesting charts and diagrams in this connection. The mortality statistics of the Twelfth Census relate to the census year June 1, 1899, to May 31, 1900. The registration area included the New England States, New York, New Jersey, Michigan, and the District of Columbia, together with 153 cities of 8,000 inhabitants or over in other States. Among the more striking facts brought out in this investigation the following may be mentioned: The highest death-rate from consumption in cities (21.1) was in March, and the lowest in June (14.7), while in rural districts the highest rate was in May (13.4) and the lowest in September (9.4). Diphtheria in cities had the highest death-rate (4.8) in December, and the lowest (2.4) in August, while in rural districts November, December, and January had the maximum and June the minimum. The maximum rate from influenza in cities was found in March and the lowest in July, August, and September (8.6 and 0.1). April showed the highest death-rate from influenza in rural districts (11.7), and August and September the lowest (0.3). Diseases of the nervous system, of the circulatory system, and of the respiratory system all show maximum death-rates in March and the minimum in summer or autumn. The determining controls in these winter or spring maxima and warm-season minima are essentially two. During the colder half of the year our sudden, frequent, and violent weather changes, especially when accompanied, as they usually are, by strong winds, act unfavourably upon the organs of respiration, upon nervous disorders, and upon the circulatory system. Further, the inclemency of the weather keeps people indoors much of the time; windows are kept closed; ventilation is bad; less attention is paid to personal cleanliness among the poorer classes; there is more crowding together under unhygienic surroundings. Hence, the opportunity for the spread of contagious diseases is then at its best, as the indirect result of meteorological conditions, rather than as the direct result of cold upon the specific cause of the diseases. Measles and scarlet fever are naturally at a maximum under the conditions of our winter life, and while influenza is probably independent of weather and climate in any direct way, it is spread most easily in the colder season for these same reasons.

Typhoid fever, on the other hand, malaria, and diarrhœal diseases show, as usual, a tendency to maxima in the warmer months, especially in the two last-named groups. High temperatures, either directly in their effects upon the specific cause of the disease, or indirectly in hastening the fermentation and decay of food products, naturally bring on an increased frequency of bowel disorders. Cholera infantum has long been one of the chief causes of the general summer maximum death-rate, which is commonly noted together with a general winter maximum.

R. DEC. W.

MOUNT WHITNEY AND MOUNT RAINIER.—A correspondent writes from Boston:

> . . . In the new edition recently published of Stieler's Hand-Atlas, the height of Mount Rainier in Washington is put down on maps 85 and 86 as 4,707 metres, or 15,298* feet, and that of Mount Whitney in California on map 89 as 4,540 metres, or 14,755* feet. This would make Rainier the highest mountain

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* These heights should read: Rainier, 15,443 feet Whitney, 14,895 feet.

> in the United States outside of Alaska; and both these measurements considerably exceed those accepted by the U. S. Geological Survey, which are given me as 14,363 feet for Rainier, and 14,499 for Whitney.
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> Again, in the New International Encyclopedia (1903) Rainier is called 14,526 feet, and Whitney 14,898 feet high.
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> How are these discrepancies to be accounted for? . . . What are the possible authorities for these new measurements?

In a second letter this gentleman puts down the measurements which he has been able to find as follows:

	WHITNEY.	RAINIER.
U. S. Geological Survey	14,499 ft.	14,363 ft.
Lippincott's Gazetteer, 1905	14,502 (14,898)	14,526
New International Encyclopædia, 1904	14,898	14,526
Stieler's Hand-Atlas, 1905	4,540 m.(14,755 ft.)	4,707 m.(15,298 ft.)
Meyers " " "	"	"

In Stieler's Hand-Atlas, edition of 1878, the heights of these mountains are given in English feet: Rainier, 12,360 feet; Whitney, 14,100 feet. In the edition of 1881 there is no change in the altitude of Mount Rainier, but Mount Whitney appears, for the first time, with the height of 14,898 feet. This was the elevation determined barometrically by the Geological Survey of the State of California.

In 1864 Mr. Clarence King, then attached to the California Geological Survey, climbed Mt. Whitney to the height, as he estimated it, of 14,740 feet; between 300 and 400 feet below the summit. Later calculations, revised by the Survey, made the altitude of the mountain 14,898 feet.

Mount Rainier was measured in 1870 by Messrs. Davidson and Lawson of the U. S. Coast and Geodetic Survey and fixed at 14,444 feet. This is the height given in Stieler's Atlas in 1891 and 1896.

In the *Dictionary of Elevations and Climatic Register of the United States, by J. M. Toner, M.D., New York, D. Van Nostrand, 1874,* the altitude of Mount Whitney is 15,086 feet, and that of Mount Rainier 14,500 feet. Authorities are not given.

In 1872 Prof. Cyrus Thomas prepared for the U. S. Geological Survey of the Territories the first of a series of Lists of Elevations, continued in 1873, 1875, and 1877, by Mr. Henry Gannett. These Lists were succeeded by the Dictionary of Altitudes, compiled by Mr. Gannett and published by the U. S. Geological Survey in 1884, 1891, and 1899. In these Lists and Dictionaries the height of Mount Rainier is put at 14,444 feet, except in the Dictionary for 1899, where it appears as 14,526 feet, the "mean of authorities."

The recognized authority for the height of Mount Whitney is the Geological Survey of California, and its measurement of 14,898 feet is adopted except in the List of Elevations for 1875, where the figures given, still on the authority of the Survey, are 14,887.

The authority for the height of 4,707 metres (15,443 feet), ascribed to Mount Rainier in Stieler's Hand-Atlas for 1905, does not appear. Not improbably the figures are the result of an error in converting the well-known measurement of 14,444 feet into metres. The elevations determined by the U. S. Geological Survey in the summer of 1905 are to be accepted as final. They are: for Mount Whitney, 14,499 feet; for Mount Rainier, 14,363 feet.

THE NORTHERN ADIRONDACKS.—Under the auspices of the New York State Geological Survey, Kemp, Smyth, and Cushing have been engaged in a study of the Adirondack region for a number of years. In a recent Bulletin of the New York State Museum (Bull. 95, 1905, pp. 271-453), Cushing has published a full account of his work in the Northern Adirondacks. In this report he outlines the geological history as he interprets it, beginning with the pre-Cambrian condition and bringing the history down to the present time. Before the Cambrian there was a land area composed of old sediments and great igneous intrusions, together with rocks of doubtful age, which underwent a complex history too obscure for definite interpretation at the present time; but there was, toward the close of pre-Cambrian time, a long erosion interval, which left the land greatly lowered and with a subdued topography. Subsidence initiated the Paleozoic, and the subsequent history of the Adirondacks has been a succession of changes of level with accompanying deposition of sediments when lowered, and renewed denudation when uplifted. There have also been periods of renewed igneous activity. The details of this history are numerous, and, so far as worked out, are stated by the author. The last great episode in the history of the Adirondacks was the glacial invasion, with which the author was less concerned than with the bed-rock geology; but he briefly states a number of interesting points—for example, that there were local glaciers in the waning stage of the ice occupation, and that glacial erosion has profoundly modified the topography of ridges on the northern slopes. Cushing's paper is divided into three parts: Summary of Geologic History, The Rocks, and Topography. The second of these is much the more detailed, but to the geographer the first and third are of most interest, and in them the author gives a very clear idea of the evolution of the Adirondack topography. R. S. T.

THE CHAMPLAIN AND HUDSON VALLEYS.—From 1900 to 1903, Prof. J. B. Woodworth has been engaged in a study of the Quaternary geology of the Hudson-Champlain Valley, the result of which has recently been published by the State (Bull. 84, N. Y. State Museum, 1905, pp. 65-265), making the most important contribution to that subject so far presented. The Hudson occupies a gorge cut in a broader, more open valley developed in an earlier cycle. The bottom of this gorge is below sea-level, and its top is bordered by rock terraces of fairly uniform elevation, representing the floor of the older valley. During the maximum extension of the last ice advance, the valley was completely occupied by ice as far as Staten Island; but as the ice was receding from the continent there was a succession of changes of marked complexity, some of which Prof. Woodworth has deciphered. In general, the history of ice recession consisted of a protruded ice tongue down the valley, taking positions successively farther and farther north, and with accompanying conditions of frontal and lateral deposits of gravel, sand, clay, and till. Some of these deposits were in the form of deltas, some were terraces built by marginal drainage, some the result of filling of marginal lakes. The paper discusses the deposits of the valley in detail, and, where possible, assigns their origin.

With continued recession a terminal lake, called Lake Albany, developed with an ice dam on the north and a land dam on the south, due to the fact that the land in the north was then depressed so that there was an upward slope seaward where now the river bottom is so level that the sea enters it. Other lake stages succeeded, and finally the well-known connection of the depressed Champlain Valley with the St. Lawrence Sea, proved by marine clays, beaches, and fossils. The evidence for this is fully presented. At the international boundary line the sea rose over land now 450 feet above sea-level.

It has been a quite general belief that the lower Hudson Valley was submerged beneath the sea during the closing stages of the Glacial period, and that the Hudson Valley clays are a result of this submergence. Woodworth takes the view that the lower Hudson Valley region was really higher and has been depressed in post-glacial time. His belief is based upon a number of considerations, among which are the absence of recognized shore-lines and of marine fossils, which are so evident in the Champlain region. Probably most students of the subject will accept this result of Woodworth's studies.

Altogether the paper presents a body of exceedingly valuable facts and an interpretation of the recent history of the valley. R. S. T.

U. S. BOARD ON GEOGRAPHIC NAMES—DECISIONS, December 6, 1905:

* AFTON: Postoffice and railroad station, Greene County, Tenn. (Not Home.)

BEAVER: Brook, tributary from north to Souhegan River, Hillsboro County, N. H. (Not Quohquinapassakessamanagnog, Quonquinapassakessananagnog, Quohquinapassakesanannaquog, nor Quoh-quinna-passa-kessa-na-nag-nog.)

BONNETERRE: Postoffice and railroad station, St. Francois County, Mo. (Not Bonne Terre nor Bontear.)

COUNTY LINE: Creek, tributary from southeast to Tallapoosa River, Chambers and Tallapoosa Counties, Ala. (Not Moore, Moore's, Moores, Mooses, nor Ware.)

FLATHEAD: Indian reservation, Flathead and Missoula Counties, Mont. (Not Jocko.)

GOLD HILL: Postoffice and railroad station, Lee County, Ala. (Not Gold Mine, Gold Ridge, nor Goldhill.)

GRINDLE: Creek and pocoson, Pitt County, N. C. (Not Grindell nor Grindool.)

GRINDOOL: Postoffice and railroad station, Pitt County, N. C. (Not Grindle nor Grindell.)

* KINGS: River, Fresno County, Cal. (Not King nor King's.)

LA PLATTE: River, tributary from east to Lake Champlain at Shelburne, Chittenden County, Vt. (Not La Platt, La Plotte, Laplätte, Laplop, Laplot, Laplotte, Platt, nor The Plot.)

LOBLOCKEE: Creek, Lee County, Ala. (Not Big Loblockee, White's, nor Whites.)

PEMEBONWON: River, Marinette County, Wis. (Not Pembinbemon, Pembine, Pembinebemon, Peme Bon Won, Penne Bon Won, nor Pike.)

SCUPPERNONG: Creek, Waukesha County, Wis. (Not Scupernong.)

SOUTH SANDY: Creek, Chambers and Tallapoosa Counties, Ala. (Not Oaktazaza nor Sandy.)

STURDIVANT: Railroad station, Tallapoosa County, Ala. (Not Sturdevant.)

UNCANOONUC: Mountains, Goffstown, Hillsboro County, N. H. (Not Uncanodnuck, Uncanoonuck, nor Unkonoonuc.)

ASIA.

DR. SVEN HEDIN'S NEW EXPEDITION TO ASIA.—Dr. Sven Hedin reached Constantinople on Oct. 21 and left a few days later for Tiflis, Erivan, Tabriz, and Teheran, for the purpose of organizing a caravan to explore and survey the

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* Reversal of former decisions.

Dashtikavir and the Dashtilut salt deserts of eastern Persia, which are still practically unknown. The present winter will be passed almost entirely in these deserts, though the explorer will keep in touch with the oases and water springs. Dr. Sven Hedin expects to complete this work early next spring and will then go to India, where he will organize an expedition to Tibet to explore its unknown highlands; in other words, he will endeavour to fill up the gaps on our present maps. The Indian Government has promised to afford him every facility, and he will have the best instruments for geographical surveying and astronomical observations.

ETHNOLOGICAL SURVEY OF THE PHILIPPINES.—Part I of the fourth volume of the scientific studies edited by the Ethnological Survey of the Philippines is a series of papers on Moro history, law and religion, the results of original study and translations from Moro texts by Dr. Najeeb B. Saleeby. The history of Mindanao prior to the advent of Islam, says Dr. Saleeby, is traditional and mythological, and no effort has been made to put it on record. With Islam came knowledge, art, and civilization. The Tarsila, or genealogies written in the Magindanao dialect with Arabic characters, contain the lineages of the Datus. They are limited in scope and very concise in the narration of events; but as they are our only source of written information on the early history of the Moros, they are valuable.

The original manuscripts could not be bought, but exact and true copies of them were secured and translated. Reduced photographs of some of the manuscripts illustrate the book. The Moros have hitherto kept these documents away from all foreigners and non-Mohammedans, but their attitude has recently changed. The translations throw considerable light upon their code of laws, religion, and the rulers and conquests of the Mindanao Moros.

The writer says that the word "Mindanao" is derived from the root "danao," which means inundation by river, lake, or sea. The derivative "Mindanao" means "that which is inundated." This is a very appropriate name, for, more than ten miles from the sea, the Rio Grande, aided by the rise of the tide, periodically overflows its banks, floods all the adjacent lands, and in the rainy season this inundation extends farther up and includes an extensive tract of country.

EUROPE.

HELIGOLAND DISAPPEARING.—The *London Standard* says that the sea is making further encroachments on Heligoland. Since the island was ceded to Germany, in 1890, it has lost a considerable area, not alone through the collapse of the sandy cliffs, which surround its shores, but also through a definite sinking on its south side. Engineers have been at work since the cession in a continuous endeavour to safeguard the island from demolition, and considerable work has been performed in filling crevices in the rock, while breakwaters have been built to break the force of the sea. It has been found, however, that the very sea-floor on which these are constructed is without stability, and it is believed that the work can only serve to delay the encroachment of the sea on the friable cliffs. The island has now a circumference of a little less than 3 miles, as against 3¾ miles in 1890. It has little importance, and is known chiefly as a watering-place. Its population numbers about 2,000, and the natives of Heligoland are creditably known among the North Sea and Baltic pilots.

OCEANOGRAPHY.

EXPLORATION OF THE SEA.—The International Committee for the Study of the Sea has issued its first *Report* (Rapports et Procès-Verbaux, Vol. III, English Edition, Copenhagen, 1905) on the results of the investigations during its first two years ending July, 1904.

In each of these years the general aims and methods of the investigations were the subject of special reports; and a number of scientific reports (Publications de Circonstance), such as "The Literature of the Ten Principal Food Fishes," "On the Spawning of the Cod," etc., were published. The national committees of the nine participating States around the North Sea are studying the hydrographical conditions and the biology of food fishes and plankton under the direction of the International Council and the Bureau it established in Copenhagen.

In the hydrographical work, soundings and water and plankton samples are taken simultaneously at fixed stations and at different periods of the year. The seasonal cruises are made in the beginning of February, May, August, and November. The aim is to determine the changes during the year in the hydrographical conditions, the distribution of the plankton, and also to some extent the distribution of fish eggs, larvæ, and young fish floating in the sea. Practical fishery experiments are carried on in each season of the year in cruises lasting from several days or weeks to months.

The study of the occurrence and distribution of the forms of life which constitute the plankton has made great progress. Plankton nets have been used at every station during the seasonal cruises, and both the surface and the deeper layers of the sea have been investigated. The very rich material thus collected has been worked out after each cruise by specialists of the various countries. Almost all the species were determined, and the descriptive lists published at Copenhagen in the *Bulletin* fill about 350 closely-printed pages.

The distribution of the plankton is by no means uniform. The Arctic waters are rich with animal life in summer, especially near the coasts. On the other hand, there are regions, as over the Faroe-Iceland Ridge, that are particularly poor in plankton.

The *Report,* which is illustrated with charts and diagrams, is chiefly given to 10 appendices published in the name and under the responsibility of the authors and relating to various problems. Among these contributors Dr. Otto Pettersson treats of variations in the Atlantic current and their bearing on meteorological and biological phenomena, and a number of writers deal with the fisheries and biological investigations.

POLAR.

THE MYLIUS ERICHSEN EXPEDITION.—Some further details have come to hand regarding the plans of this expedition (see BULLETIN, p. 554, Sept., 1905). The *Scottish Geographical Magazine* (Dec., 1905) says the intention is to start about the middle of June, 1906, on board the *Denmark,* the party consisting of twenty-one persons, among whom will be a zoologist, a painter, a doctor, a botanist, and a biologist. Seventy sledge-dogs and some motor boats are to be taken. The vessel is to be steered for the east coast of Greenland, and it is hoped that a harbour may be found in lat. 70°. From this harbour an expedition consisting of twelve men with sledges and dogs will start in March, 1907, for the extreme north, where its members hope to map part of the unknown coast of eastern Greenland. This party is expected to return in July, 1907, and, if conditions are favourable, it is contemplated that another party may be sent into the interior, or may even attempt to cross the country from east to west in a high latitude, say, along the 70th or 75th parallel. The expedition is expected to return finally in the summer of 1908, and the sum of £11,000 is given as its probable cost.

VARIOUS.

VOLCANIC ACTIVITY IN SAMOA.—Our Consul at Apia, Samoa, reported in September that between Aug. 2 and 4 last a new volcanic outbreak occurred in the island of Savaii, about eight miles east of the old volcano Mangi and 10 miles south of Matautu. The activity of the new volcano was phenomenal, for in a fortnight it created a new mountain with three peaks, one of which was about 2,000 feet above sea-level. The ejected matter represents many millions of tons of rocks, slag, cinders, and ash. At the beginning of the outbreak this mass was moving towards the sea, or, in other words, towards the settled part of the island. When the Consul wrote, however, the mass had come practically to a standstill, and it then measured about five miles in length and one-fourth of a mile in width.

A further eruption took place on Aug. 21. It was preceded by a violent earthquake shock, which destroyed a large number of buildings, and an enormous quantity of material was ejected. Dr. W. H. Solf, the German Governor of Samoa, reported on Sept. 17 that the volcano was still active and was visible at Apia, fifty miles away.

SHELLS AS MONEY.—The late Prof. Dr. Oskar Schneider, of Dresden, left at his death the manuscript for a book in which he gave the results of his long study of the use of kauri and other shells as money. The manuscript was edited by Carl Ribbe, the ethnologist, and has just been published by the Geographical Society of Dresden under the title of "Muschelgeld-Studien." The volume has 190 pp., including index and 16 pp. of plates showing many strings of different kinds of shell money. The book treats of the distribution and uses of shell money, its manufacture, etc., among the islands of the Pacific and in Africa. Mr. Ribbe's two years' experience in the Solomon Islands enabled him to add some facts to Dr. Schneider's work. The book may lead to further studies of this subject, before these forms of money completely disappear in the face of more convenient mediums of exchange.

ANNIVERSARY OF THE SCOTTISH GEOGRAPHICAL SOCIETY.—The twenty-first anniversary of the Royal Scottish Geographical Society was celebrated by a dinner in Edinburgh on Monday, November 27.

A GOLD MEDAL FOR DIRECTOR WALCOTT.—The Academy of Natural Sciences of Philadelphia on Nov. 7 voted the Hayden Memorial Gold Medal to Charles Doolittle Walcott, Director of the United States Geological Survey, in recognition of the value of his individual contributions to geological science and of the benefits derived from his able and conscientious discharge of the official trust confided to him.

AMERICAN GEOGRAPHICAL SOCIETY—TRANSACTIONS OF THE SOCIETY, NOVEMBER, 1905.—A regular meeting of the Society was held at Mendelssohn Hall, No. 119 West Fortieth Street, on Tuesday, November 28, 1905, at 8.30 o'clock P. M.

Secretary Raven in the chair.

The following persons, recommended by the Council, were elected Fellows:

Alzamore H. Clark,
Marcel Pietrzycki,
John Davenport Wheeler,
Richard B. Potter,
Wolfred Nelson,
William Douglas Pickett,
William P. Potter,
E. R. Feeny,
Herbert Parsons,
Robert Brewster Stanton,
John B. Farish,
F. Aug. Heinze,
John Henry Hammond,
Frederic Ashton de Peyster,
Samuel W. Marvin,
Henry St. Clair Putnam,
Herschel C. Parker,
Daniel W. Iddings,
Andrew S. Iddings,
George Carroll Curtis,
William C. Tucker,
Carl Eickemeyer,
Casper Whitney,
Charles H. Fahs,
William S. Thomas,
S. Reed Anthony,
Perry Belmont,
Heber R. Bishop,
Davenport Brown,
Stephen N. Bond,
Willis A. Briscoe,
Clinton T. Bissell,
H. D. Bushnell,
Ammi Brown,
Parker Corning,
A. Walpole Craigie,
A. Bleecker Banks,
William Griggs Shailer,
Harvey D. Cowee,
John Armstrong Chanler,
J. Benjamin Dimmick,
Robert E. Dowling,
John L. Buel,
Robert D. Carey,
Frank E. Clark.

Mr. Francis M. Bacon then offered the following amendment to the By-Laws of the Society:

Amend Chapter 1, Section 5, so that it shall read:

> The name of any Fellow or Member may be dropped from the list by a vote of the Council and without reference to the Society.

It was moved and seconded that the proposed alteration be referred to the Council for consideration and report; and it was so voted.

The Chairman then introduced Mr. Bailey Willis, of the United States Geological Survey. who addressed the Society on his Experiences among the Chinese. Stereopticon views were shown.

On motion, the Society adjourned.